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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/776,706 | 02/11/2004 | Brent E. Little | LO-24 | 3448 |
| 35723 | 7590 | 11/29/2005 | EXAMINER | |
| LITTLE OPTICS, INC 9020 JUNCTION DRIVE ANNAPOLIS JUNCTION, MD 20701 | | | ROJAS, OMAR R | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2874 | |

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/776,706

Applicant(s)

LITTLE, BRENT E.

Examiner

Omar Rojas

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☒ Other: Detailed Action.

DETAILED ACTION

Response to Amendment

1. With regards to the amendment filed on September 15, 2005, the requested change to the specification has been entered. Claims 1-12 are pending.

2. The declaration filed on September 15, 2005 under 37 CFR 1.131 has been considered but is ineffective to overcome the Lam reference (US 6,819,853 B2).

3. The evidence submitted is insufficient to establish diligence from a date prior to the date of reduction to practice of the Lam reference to either a constructive reduction to practice or an actual reduction to practice. In the Examiner's opinion, the evidence submitted by Applicant in the declaration does support a conception date prior to the filing date of the Lam reference.

However, the evidence submitted does not establish due diligence for the reasons below.

Under 37 CFR 1.131, the critical period in which diligence must be shown begins just prior to the effective date of the reference or activity and ends with the date of reduction to practice, either actual or constructive (i.e., filing a United States patent application). See Manual of Patent Examining Procedure ("MPEP") § 715.07(a). Here, the effective date of the Lam reference is its filing date of September 17, 2002. All of the activity dates relied upon by Applicant to show diligence (e.g., as listed on page 5 of the declaration) occurred after the September 17, 2002 filing date of the Lam reference. Thus, due diligence is not established by the evidence submitted in the declaration.

4. The declaration filed on September 15, 2005 under 37 CFR 1.131 is formally defective for the following reasons:

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- a. The declaration must include an acknowledgment by the declarant that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001).
- b. The declarant must set forth in the body of the declaration that all statements made of the declarant's own knowledge are true and that all statements made on information and belief are believed to be true.

See MPEP § 715.04 [R-2].

5. An examination of this application reveals that applicant is unfamiliar with patent prosecution procedure. While an inventor may prosecute the application, lack of skill in this field usually acts as a liability in affording the maximum protection for the invention disclosed. Applicant is advised to secure the services of a registered patent attorney or agent to prosecute the application, since the value of a patent is largely dependent upon skilled preparation and prosecution. The Office cannot aid in selecting an attorney or agent.

A listing of registered patent attorneys and agents is available on the USPTO Internet web site <http://www.uspto.gov> in the Site Index under "Attorney and Agent Roster." Applicants may also obtain a list of registered patent attorneys and agents located in their area by writing to the Mail Stop OED, Director of the U. S. Patent and Trademark Office, PO Box 1450, Alexandria, VA 22313-1450

6. The following claim drafted by the examiner and considered to distinguish patentably over the art of record in this application, is presented to applicant for consideration (the additional language added to the claim has been underlined):

Claim 1. An optical via comprising:

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(a) a first waveguide in a first planar layer, said first waveguide having a first refractive index value and an input end, and supporting an optical mode with a first effective index value,

(b) a second waveguide in a second planar layer, said second waveguide having a second refractive index value and an output end, and supporting a second optical mode with a second effective index value,

(c) said first mode of said first waveguide and said second mode of second waveguide evanescently interacting over an interaction length, and

(d) means for adjusting the magnitude of said mode-to-mode evanescent interaction, adjusting the detuning between said effective indexes of said first and second modes, and adjusting said interaction length, in such a way as to effect broadband and substantially complete optical power transfer from said input end of the first waveguide to said output end of the second waveguide;

wherein the optical via introduces less than 0.1 dB of excess insertion loss, and the insertion loss does not vary over the wavelengths from 1510 nm to 1620 nm.

7. Similar changes as outlined above are suggested to independent claim 7 in order to distinguish patentably over the art of record in this application.

Claim Rejections - 35 USC § 102

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. **Claims 1, 3-7, and 9-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Patent No. 6,819,853 B2 to Lam et al. (hereinafter "Lam").**

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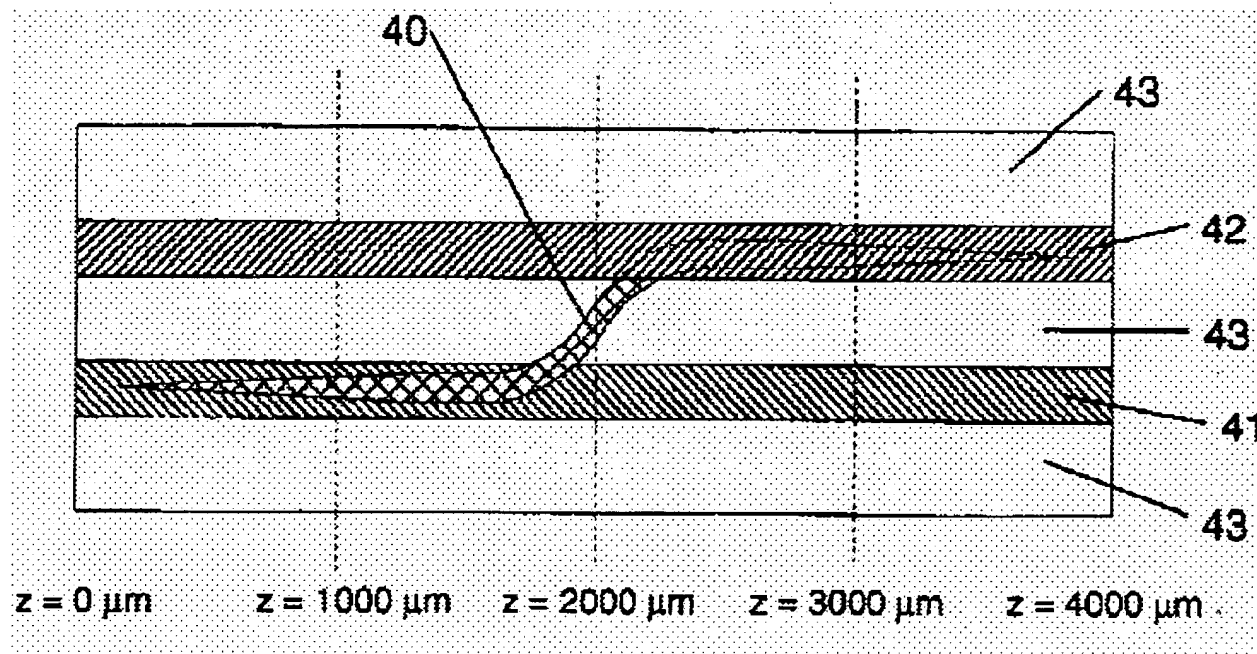
Regarding claim 1, Lam teaches an optical via (e.g., see Figure 4(a)) comprising:

(a) a first waveguide 40 in a first planar layer, said first waveguide having a first refractive index value and an input end, and supporting an optical mode with a first effective index value,

(b) a second waveguide 42 in a second planar layer, said second waveguide having a second refractive index value and an output end, and supporting a second optical mode with a second effective index value,

(c) said first mode of said first waveguide and said second mode of second waveguide evanescently interacting over an interaction length, and

(d) means for adjusting the magnitude of said mode-to-mode evanescent interaction, adjusting the detuning between said effective indexes of said first and second modes, and adjusting said interaction length, in such a way as to effect broadband and substantially complete optical power transfer from said input of first waveguide to said output of second waveguide. See column 4, lines 29-54. Figure 4(a) is reproduced below.



Regarding claim 3, the means of adjusting the magnitude of waveguide-to-waveguide interaction comprises adjusting the physical separation between said first waveguide 40 and said second waveguide 42 as shown in Figure 4(a).

Regarding claim 4, the input/output ends of first waveguide 40 are tapered along the interaction length to adjust the detuning between effective indices of the first and second modes.

Regarding claim 5, the first waveguide 40 is tapered linearly as shown in Figure 4(a) from an input end (i.e., the right tip of waveguide 40) to an output end over an interaction length.

Regarding claim 6, see Figure 4(b) of Lam and col. 4, lines 5-7 (disclosing the use of silica for the waveguides).

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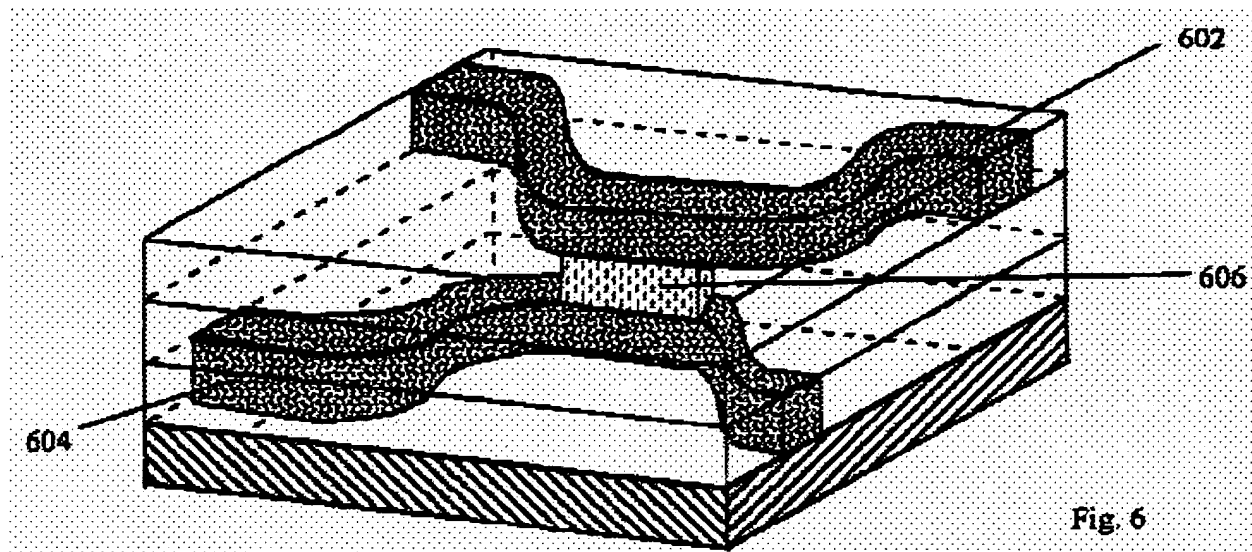
Regarding claims 7 and 9-12, the previous remarks are incorporated herein. Lam discloses substantially the same invention as claimed.

Claim Rejections - 35 USC § 103

10. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

11. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patent No. 6,724,968 to Lackritz et al. (hereinafter "Lackritz") in view of Lam.

Regarding claims 1-12, as seen in his Figure 6, Lackritz discloses first and second waveguides (602, 604) which are formed in different planar layers and interact over a coupling region 606. The physical separation of the waveguides 602, 604 changes in said coupling region 606 since the waveguides are brought closer together. The waveguides may have the same refractive indices depending on the amount of coupling desired between the waveguides (see column 22, lines 44-60). The waveguides may be made of polymer material (col. 6, lines 9-12). Figure 6 of Lackritz is reproduced below.



Thus, Lackritz only substantially differs from claims 1-12 in that Lackritz does not expressly teach adjusting the detuning between the first and second modes by changing the width of one or both waveguides using tapering (e.g., as recited by claim 5).

Lam, as previously mentioned, teaches all the limitations of claim 5.

The motivation for combining Lam with Lackritz is to achieve adiabatic power transfer between the waveguides. See Lam at col. 4, lines 37-40.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claims 1-12 by combining Lam with Lackritz.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omar Rojas whose telephone number is (571) 272-2357. The examiner can normally be reached on Monday-Friday (12:00PM-8:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick, can be reached on (571) 272-2344. The official facsimile number for regular and After Final communications is (571) 273-8300. The examiner's RightFAX number is (571) 273-2357.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Omar Rojas
Patent Examiner
Art Unit 2874

or
November 25, 2005



AKM ENAYET ULLAH
PRIMARY EXAMINER